teresting routine duty gives the record its value.

The meteorological work has now come under the direction of the writer as a part of the work of the department of geography. The observations are made at 8 A.M. and 8 P.M., 120th meridian time, besides which there are continuous records of pressure, temperature and relative humidity from the recording instruments. The eye observations are now as follows: wet and dry bulb thermometer readings, maximum and minimum temperatures for the preceding twelve hours, air pressure, wind direction and estimated velocity, amount of cloud, weather and precipitation during the preceding twelve hours. The data are summarized and published monthly in the *Meteorological Synopsis* of Berkeley and a monthly report is made to the United States Weather Bureau on the regular form of report for the cooperative observers.

The University of California has for Berkeley and for Mount Hamilton meteorological records of considerable length and more complete than exist for many places in the United States not regular stations of the Weather Bureau. In a state where climate is such an important factor in the life of the people as it is in California, it is proper that the educational institutions, but above all the state university, should pay more than ordinary attention to meteorology.

William G. Reed

Berkeley, Cal.,
March 1, 1913

Review of Forest Service Investigations[1]

The new periodical issued by the Forest Service, the *Review of Forest Service Investigations,* is the direct outcome of the standardization and coordination of the investigative work done by the service. This investigative work has been placed on a more solid footing by the establishment of investigative committees in each district and of a central investigative committee in Washington.

[1] Volume I., issued March 11, 1913, by U. S. Department of Agriculture, Forest Service.

The *Review* is to serve as a medium for keeping foresters in touch with the scientific work of the profession in America. It will do this by publishing progress reports on major investigations the completion of which will require a number of years, during which time nothing would otherwise be known of them; by publishing full reports on minor studies not of sufficient importance to warrant publication as separate bulletins or circulars, but which nevertheless contain valuable material; and by giving a general view of the scientific forest problems in this country and of what is being done toward their solution. In short, the district and central investigative committees and the *Review* represent the crystallization of the scientific work of the Forest Service; they will make possible a very much higher degree of efficiency.

The present number, being the first, is purely preliminary. It gives no conclusions or reports of investigations, but shows the organization and classification of the scientific work of the Forest Service, the problems in need of solution, and, in general, the manner of attacking these problems. It gives the four main heads, Dendrology, Grazing, Products and Silviculture, with their subdivisions, and describes concisely the problems to be studied under each subdivision. Under Dendrology it shows the importance of studies of tree distribution and of wood structure. Under Grazing, work is being done to collect basic information on the forage, to find methods of reseeding the more valuable kinds, both artificially and naturally, and ways of handling stock so as to increase the carrying capacity of the range, better the condition of the stock, and insure complete utilization of the forage. Under Products, investigations are being carried on to learn the properties of wood, mechanical, physical and structural, so that each kind can be put to its best use and handled most efficiently in manufacturing and kiln drying; to increase the knowledge of preservatives, including the methods of using them and their effects; to develop uses for products of trees other than saw

timber, such, for instance, as making alcohol from wood waste; in addition, Products is gathering much statistical information of use not only to the Forest Service, but to all wood-using industries. Products comes in closer contact with the lumber industry than any other branch of the service and has already secured results of great value to lumbermen. Under Silviculture, the *Review* gives in some detail the important problems on which the service is working. It describes briefly the establishment and purpose of the experiment stations; under each head (forestation, forest influences, management, etc.) it not only gives the problems to be studied, but shows their importance and their relation to each other. The experiment being conducted at Wagon Wheel Gap to determine the influence of forest cover on run off and erosion is given rather fully. This is probably the most complete and far-reaching experiment of its kind in the world.

At the end of the *Review* is the investigative program for 1912. A study of this program will show the thoroughness with which the field is being covered.

BARRINGTON MOORE

WASHINGTON, D. C.

SPECIAL ARTICLES

A LABORATORY METHOD OF DEMONSTRATING THE EARTH'S ROTATION

THE two laboratory methods in general use for proving the rotation of the earth are Foucault's pendulum and gyroscope experiments. The first is inapplicable in many laboratories, because there is no convenient place to hang a sufficiently long and heavy pendulum, while the apparatus for the second is necessarily expensive. The following experiment is designed to provide a simple and convenient means by which the earth's rotation may be demonstrated in a small laboratory. The demonstration depends upon the fact that, if a circular tube filled with water is placed in a plane perpendicular to the earth's axis, the upper part of the tube with the water in it is moving toward the east with respect to the lower part. If the tube is quickly rotated through 180 degrees about its east and west diameter as an axis, the part of the tube which was on the upper side attains a relatively westward motion as it is turned downwards (since it is drawing nearer the earth's axis). But the water in this part of the tube retains a large part of its original eastward motion, and this can be detected by suitable means.

Since the east and west axis itself is rotating with the earth, only that component of the water's momentum which is parallel to this axis will have an effect in producing a relative motion when the tube is turned. If then α is the angular velocity of the earth's rotation, r the radius of the circle into which the tube is bent, and θ the angular distance of any small portion of the tube from the east and west axis, the relative velocity between the water and the tube when it is quickly turned from a position perpendicular to the earth's axis through 180 degrees is

$$\text{Velocity} = V = \frac{\alpha r}{\pi}\int_0^{2\pi} \sin^2\theta d\theta = \alpha r.$$

In order to prevent convection currents, it is best to hold the ring normally in a horizontal position, in which case the relative motion is of course $\alpha r \sin\phi$, where ϕ is the latitude of the experimenter.

To perform the experiment, glass tubing 1.3 cm. inside diameter was bent into a circular ring 99.3 cm. in radius, and a short glass tube closed with a rubber tube and screw

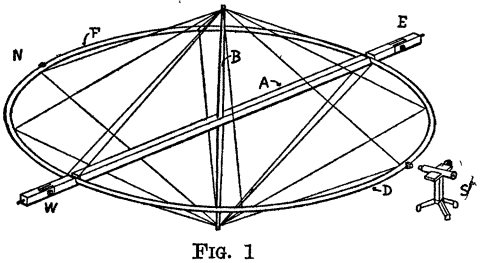

FIG. 1

clamp was sealed into it to allow for the expansion of the water and to provide a place for filling. The ring was fastened with tape into notches in the wooden rod A (Fig. 1), which served as the horizontal axis, and was